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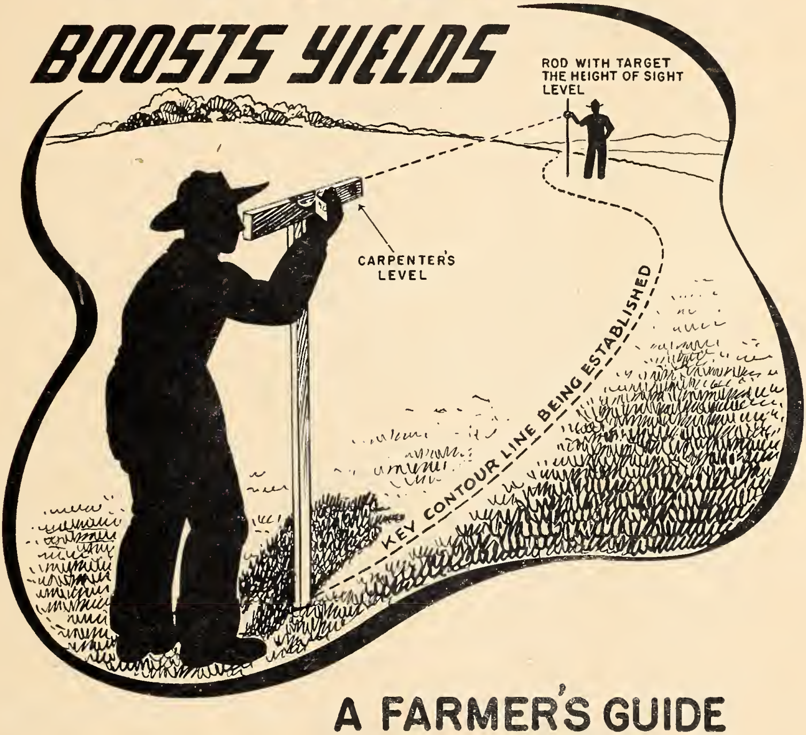
U. S. Department of Agriculture

CONTOUR FARMING

BOOSTS YIELDS


ROD WITH TARGET THE HEIGHT OF SIGHT LEVEL
CARPENTER'S LEVEL
KEY CONTOUR LINE BEING ESTABLISHED

A FARMER'S GUIDE IN LAYING OUT KEY CONTOUR LINES AND ESTABLISHING GRASSED WATERWAYS

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UNITED STATES DEPARTMENT OF AGRICULTURE

WE are faced with a labor shortage, an equipment shortage, and various other production problems, as we enter the crop year of 1943. Consequently, we need to use every method that will help overcome these handicaps as we strive to produce adequate food for ourselves and our fighting allies.

Farmer experience and tests by experiment stations show that conservation measures help to increase yields. Two of these conservation practices—contouring of land and grassing of waterways—are briefly outlined in this booklet.

Contour Farming Boosts Yields

Farmers who change from the customary up-and-down-hill straight line farming to contour cultivation to save their soil find that their crop yields increase materially. Many farmers report yield increases ranging from 10 to 50 percent.

In fitting the farming pattern to the natural lay of the landscape, farmers get their crop rows on the level. Water stays in each furrow or implement mark and soaks into the ground. This method of farming not only conserves water for plant growth but also keeps it from running directly downhill and taking the topsoil with it. Contour furrows resemble a hog trough on a level floor, in contrast with one on a slope with one end much lower than the other.

The success of contouring depends on the safe disposal of excess runoff. Erosion and gullies are likely to develop where natural drainageways or draws are not maintained in sod. Grassed waterways are easy to establish and maintain. A few pointers are given elsewhere in this leaflet.

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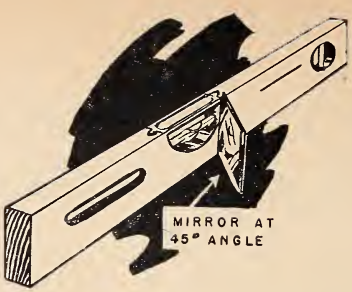
CONTOUR FARMING, in addition to saving soil and boosting crop yields, saves on fuel and cuts down wear and tear on machinery. Comparative tests of contour and up-and-down-hill plowing on an 8-percent slope have shown that in a given time a farmer plowing on the contour can plow 10 percent more land and that acre for acre his fuel consumption will be 10 percent less. The AAA allows payments for contour seeding, contouring of intertilled crops, and contour strip cropping.

Farmers who wish to establish contour lines in their own fields don't necessarily have to have any special skill or expensive equipment. Most of the simple equipment needed can be improvised from materials already in the work shed.

THE FIRST NECESSITY is some sort of a leveling device. Dependable hand levels, which have been available on the market at prices from $2.50 up, have proved convenient.

A FARMER CAN MAKE AN EFFICIENT DEVICE from an ordinary carpenter's level by attaching a small mirror on the right side at a 45° angle immediately in front of the bubble tube. The farmer sights along the upper right-hand edge of the carpenter's level and at the same time adjusts the device. He observes the bubble's reflection in the mirror to make sure the instrument is level.



The rigged-up carpenter's level can be mounted on a pole or board. (See cover illustration.) The bubble is centered by moving the stake forward or backward.

With any of the suggested equipment two men are required for laying out the contours. The first one operates the level and the second one carries the "rod" to locate the points on which contour line is staked out. The "rod" is a board or pole on which a target is placed the same height from the ground as the top of the level from which you sight. The target makes sighting easier. In event a hand level is used, the rod must be the same height as the eye level of the person operating the instrument.

THE FIRST THING TO DECIDE is where the key contour, or base line, should be located. On relatively uniform slopes a few hundred feet long one key contour line about halfway down the field probably will be adequate to establish the direction of plowing, seedbed preparation, planting, and cultivation.

If the slope is very long or irregular, more key contours will be needed. In such instances the first key contour probably should be laid out from one-fourth to one-third of the way down the hill.

Following are the steps in the field operation (see cover drawing):

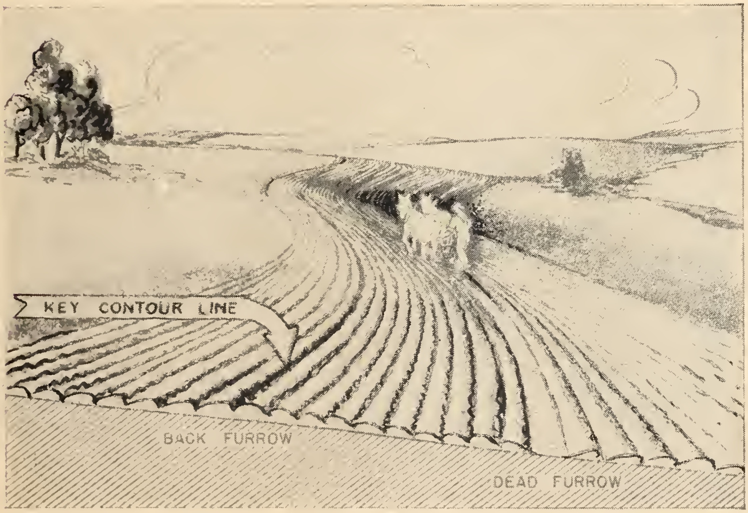
1. Set the level on the location of the proposed key contour line, preferably at one end of the field. Point the instrument in the direction the contour line is likely to run and center the bubble.

2. Send the helper, who carries the rod, in the direction of the line about 100 feet (in some cases 25 to 50 feet). Have the helper hold the rod straight, or plumb, and have the level man sight on the rod's target. Direct the helper up or down the hill until the rod's target lines up with the level's line of sight.

3. Have the helper set a stake and send him on 100 feet farther to the next point.

4. Continue the process until the person operating the level can no longer see the target plainly enough to locate the next stake. Then move the level to the last point established and continue.

In following the contour line with the implement, do not make sharp turns at the stakes, but run in smooth curves.


KEY CONTOUR LINE
BACK FURROW
DEAD FURROW

TO SUPPLEMENT AND PROTECT CONTOURED FIELDS remember that grassed waterways are safe ways. Grass can be established in drainageways the same as in meadows. Seedbed preparation, soil treatments, and seeding can be done at the same time.

If you're liming the field, lime the waterway. If you're fertilizing the field, fertilize the waterway. If you're seeding the field, seed the waterway, too. Use the same seeding mixture if it includes sod-forming grasses, such as bluegrass or redtop. If not, these grasses can be broadcast later in the drainageways.

The sod in the waterway is established while the field is in meadow. When the field is plowed, leave the sod waterway wide enough to carry away surplus rainfall. Ordinarily no waterway should be less than 12 feet in width. In most cases it should be much wider.

Drainageways can be prepared for seeding without working the whole field, but when this is done all seedbed preparations must be made up and down instead of across the channel. Light mulching with straw or strawy manure is advisable regardless of how the seedbed is prepared.

WORK ON WATERWAYS should be started very early for spring seeding. After the drainageway has been shaped and a firm seedbed prepared, a recommended seeding mixture of grasses and legumes can be sown before any other spring work is done. For fall seeding, the grasses can be sown in late August or early September, followed by the legumes early the following spring. A light seeding of small grain can be included with the seeding mixture for protection against erosion, but the grain crop must be removed before it injures the grass and legumes.

WHERE THE CHANNEL IS GULLIED, it is advisable to plow or disk the sides in toward the middle and thoroughly pack with a roller before seeding. This widens the channel so that the water can spread out and flow slower than it would if it were concentrated in a narrow channel.

In clean-cultivated fields where there is likely to be considerable runoff, it is often advisable to prepare the seedbed in the drainageway in the spring and seed Sudan grass or small grain. Allow this crop to stand until fall and then seed the grass mixture with as little seedbed preparation as necessary. The old roots in the ground, the stubble left standing and straw of the old crop all help protect the new seeding from erosion.

Sod is recommended for breaks in waterways and to establish grass in narrow, steep, or gullied draws.

Mow waterways and rake the grass for hay. Bulky accumulations smother the grass, cause silting and sometimes concentrate water sufficiently to start small gullies in the waterway.

All grassed waterways should be carefully protected and maintained.

AVOID CUTTING THE SOD when crossing with plows, disks, and other implements. Leave the plow furrows irregular or jagged where the cultivated portion of the field joins the waterway. Never plow furrows parallel to a grassed waterway. This would start gullies along the sides of the waterway.

The AAA allows payments for the establishment of grassed waterways. The channel must be of sufficient width to carry the runoff from the drainage area, and the average width should be at least 10 feet.

Additional information on contouring and grassed waterways may be obtained from local offices of the Soil Conservation Service, the county agent, or the county AAA headquarters.

Some Precautions

When contour tillage is used alone on soils low in organic matter and already suffering from considerable erosion, or on soils having hard clay subsoil, excess runoff water may break through rows, causing gullying. In such cases strip cropping or terracing may be needed in addition to contouring. On some clay soils a drainage problem may be created and in such cases a technician should be consulted before contouring.

Washington, D. C.

January 1943

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